

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* MARTIN WEINBERG

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Appeal No. 1998-0215  
Application No. 08/052,671

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ON BRIEF

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Before PAK, TIMM, and PAWLIKOWSKI, *Administrative Patent Judges*.

PAK, *Administrative Patent Judge*.

*DECISION ON APPEAL*

This is a decision on an appeal under 35 U.S.C. § 134 from the examiner's refusal to allow claims 1 through 4 and 18, which are all of the claims pending in the above-identified application.

*APPEALED SUBJECT MATTER*

Appellant states that "[t]he claims all stand or fall

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together." See Brief, page 3. However, appellant also  
provides

substantive arguments for the separate patentability of the subject matter recited in claims 4 and 18 in response to the examiner's separate rejections of the same. Compare Answer, pages 3-5, with Brief, page 8 and Reply Brief, page 6. Under these circumstances, we interpret appellant's above statement to mean that the claims in each rejection stand or fall together. Therefore, for purposes of this appeal, we will consider the propriety of the examiner's rejections of claims 1, 4, and 18 consistent with 37 CFR § 1.192(c)(7)(1997).

Claims 1, 4, and 18 are reproduced below:

1. An electrical insulating material in sheet or tape form, said material having a woven fiberglass cloth component and a heat-bondable component consisting essentially of a thermoplastic resin, said resin having a melting point of less than about 525 degrees F, and said resin being bonded to the fiberglass strands and being present in amounts operable to bond overlapping knuckles of the woven fiberglass together, and to prevent significant fraying of cut edges of said sheet or tape, and to form a remeltable and resolidifiable bondable thermoplastic surface on the cloth.
4. The insulating material of Claim 3 further comprising a surfactant saturating the cloth component fiberglass strands to enhance the bond between the resin and the fiberglass strands.
18. An electrical insulating material in sheet or tape form, said material having a woven cloth component which includes fiberglass strands, and a bondable component consisting essentially of polyethylene terephthalate

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glycol thermoplastic resin, said resin being bonded to the fiberglass strands and being present in amounts operable to bond overlapping knuckles of the woven fiberglass together, and to prevent significant fraying of cut edges of said sheet or tape, and to form a remeltable and resolidifiable bondable thermoplastic surface on the cloth.

#### *PRIOR ART*

In support of her rejections, the examiner relies on the following prior art references<sup>1</sup>:

Pedlow 1977	4,018,962	Apr. 19,
Wade, Jr. et al. (Wade) 1988	4,761,520	Aug. 2,
Mater et al. (Mater) 1992	5,118,558	Jun. 2,
Yoshimi et al. (Yoshimi <sup>2</sup> ) (published Japanese Kokai Patent Application)	63-7602	Jan. 13, 1988

#### *REJECTION*

The appealed claims stand rejected as follows:<sup>3</sup>

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<sup>1</sup> Our reference to the published Kokai Japanese application is to the corresponding English translation of record.

<sup>2</sup> The examiner refers to it as "Nihon Radiator" at page 2 of the Answer.

<sup>3</sup> The examiner has withdrawn § 112 rejections set forth in the final Office action dated March 3, 1994 (Paper No. 6) and the first Supplemental Examiner's Answer dated August 8, 1996 (Paper No. 16), respectively. See page 2 of the Answer dated September 18, 1995 (Paper No. 13) and page 1 of the second Supplemental Examiner's Answer dated July 8, 1997 (Paper No.

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1) Claims 1 through 3 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, 35 U.S.C. § 103 as unpatentable over the disclosure of Pedlow;

2) Claim 4 under 35 U.S.C. § 103 as unpatentable over the disclosure of Pedlow;

3) Claim 18 under 35 U.S.C. § 103 as unpatentable over the combined disclosures of Pedlow and Mater;

4) Claims 1 through 4 under 35 U.S.C. § 103 as unpatentable over the disclosure of Wade;

5) Claim 18 under 35 U.S.C. § 103 as unpatentable over the combined disclosures of Wade and Mater;

6) Claims 1 and 3 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, 35 U.S.C. § 103 as unpatentable over the disclosure of Yoshimi; and

7) Claims 4 and 18 under 35 U.S.C. § 103 as unpatentable over the disclosure of Yoshimi.

#### *OPINION*

We have carefully reviewed the claims, specification, and

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18). The examiner has also withdrawn the § 102 rejection of claims 1 and 3 as anticipated by Yoshimi newly set forth in the Answer. See page 2 of the first Supplemental Examiner's Answer.

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applied prior art, including all of the arguments advanced by both the examiner and appellant in support of their respective positions. As a result of this review, we affirm only the following examiner's rejections:

1) The rejection of claims 1 through 3 under § 102(b) as anticipated by, or in the alternative under 35 U.S.C. § 103 as unpatentable over, the disclosure of Pedlow; and

2) The rejection of claims 1, 3, and 4 under 35 U.S.C. § 103 as unpatentable over the disclosure of Yoshimi. Our reasons for this determination follow.

*REJECTION BASED ON PEDLOW*

As evidence of obviousness of the subject matter defined by claims 1 through 3 under 35 U.S.C. § 103, the examiner relies on the disclosure of Pedlow. Appellant acknowledges (Brief, page 5) that:

The Pedlow tape includes a fabric base sheet 102 which may be woven glass (Col. 6, line 26). This woven glass sheet 102 has a resinous base flexible coating 104 applied thereto. The resinous base coating is a thermoplastic which may be fluid at ambient temperatures (Col. 2, lines 67-68); or it may be solid at ambient temperatures and plasticized to melt at temperatures below about 300 degrees C (Col. 3, lines 1-2). The thermoplastic coating has incorporated therein a high melting point fiber substance. The thermoplastic coating also has incorporated therein intumescent or heat

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foamable substances, which, upon heat activation, under high temperature such as fire, or arcing conditions, tend to flame and fire-proof the insulating tape (Col[.] 2, lines 43-55). When the tape is exposed to temperatures above about 350 degrees C., a foamy charred residue of the thermoplastic resin results (Col. 2, lines 57-58).

However, appellant argues that the phrase "a heat-bondable component consisting essentially of a thermoplastic resin" recited in claim 1 precludes the presence of the high melting

fiber and intumescing substances described in Pedlow. See, e.g., Brief, page 5 and Reply Brief, page 2. However, we are not persuaded by this argument.

We note that this phrase only limits the claimed heat-bondable component to a thermoplastic resin and other substances that do not materially affect the basic and novel characteristics of the **claimed invention**.<sup>4</sup> See *In re Janakirama-Rao*, 317 F.2d 951, 954, 137 USPQ 893, 896 (CCPA 1963). The claimed electrical insulation material itself, however, does not exclude those additional substances which affect its basic and novel characteristics. *In re Herz*, 537 F.2d 549, 551-52, 190 USPQ 461, 463 (CCPA 1976) ("It is axiomatic that claims are given their broadest reasonable construction consistent with the specification. [Citation omitted.] This complements the statutory requirement for particularity and distinctness (35 U.S.C. [§] 112, second paragraph), so that an applicant who has not clearly limited

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<sup>4</sup> It appears that appellant erroneously states that the phrase "consisting essentially of" precludes those materials which materially affect the basic and novel characteristics of the invention described in the prior art, i.e., Pedlow. See Brief, page 5.



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his claims is in a weak position to assert a

narrow construction.") The transitional phrase "consisting essentially of" is not used in the context of the claimed electrical insulation material.

As pointed out by appellant (e.g., Brief, page 5 and Reply Brief, page 2), Pedlow describes an electrical insulation material which includes, *inter alia*, high melting point fiber and intumescent substances. However, these substances are not employed as heat-bondable components. See also Reply Brief, page 2. Rather, Pedlow uses thermoplastic resins as heat-bondable components (component bondable to woven glass upon heating). See column 6. Thus, we do not agree with appellant that the phrase in question precludes the presence of the high melting point fiber and intumescent substances described in Pedlow.

Even if we were to interpret the phrase in question as limiting the resulting thermoplastic coating (not the claimed heat-bondable component) as consisting essentially of a thermoplastic resin, our conclusion would not be altered. In this regard, it is important to note that appellant has the burden of showing that the high melting point fiber and

intumescent substances described in Pedlow materially affect the basic and novel characteristics of the **claimed** invention. *In re De Lajarte*, 337 F.2d 870, 874, 143 USPQ 256, 258 (CCPA 1964). However, appellant has not proffered any objective evidence showing that the presence of these substances materially affects the electrical insulation property of the claimed electrical insulation materials. See Brief and Reply Brief in their entirety. The fact that these substances can improve the fireproofing and non-flow properties of the claimed electrical insulation material does not support appellant's contention that they materially affect the claimed electrical insulation material. See, e.g., *Herz*, 537 F.2d at 551-52, 190 USPQ at 463.

Appellant argues that "the Pedlow reference does not suggest the use of a thermoplastic resin that is remeltable and resolidifiable to form a bondable surface on the fiberglass component of the fireproofing tape." See, e.g., Brief, page 5. In support of this argument, appellant refers to column 2, lines 55-60, of Pedlow, which relates the property of the insulation tape composition under the high

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arcing or applied fire temperature above about 350°C. This position, however, is without merit.

We find that Pedlow states (column 2, lines 19-35 and 55-60) that:

One primary difficulty of ordinary insulating tape having a low melting resin base, such as polyvinyl chloride plastisol, most conveniently used, and even other low melting thermoplastics is that the resin melts and flows away under the applied heat, and will not therefore, protectively insulate the site where it is needed. The present fireproofing tape, while using an easy flowing and easily applied thermoplastic resinous composition, includes a heat resistant fiber distributed therein which both inhibits the resin from flowing away from the site of high heat, but also includes fireproofing and intumescent substances which foam and release fireproofing vapors, so that both serve to restrain the composition from flowing under heat. Under the flaming or arcing heat it chars to a heat insulating coating fixed protectively about the lead cable usually to be protected.

. . . . .

. . . . . The insulating tape composition is converted at the high arcing or applied fire temperatures above about 350°C to a foamy charred residue of the thermoplastic resin, which remains as a protective charred and foamy thick insulating coating upon the cable.

The above-mentioned low melting thermoplastics include polyethylene, polypropylene, and polyvinyl chloride. Compare appellant's preferred polypropylene resin in claim 3 with

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Pedlow, column 1, lines 59-64. These thermoplastics, even after being homogeneously mixed with heat stabilizers, are soft at a temperature of 150°C to 300°C. See Pedlow, column 6, lines 39-60. To firmly bond the thermoplastics to the fiberglass cloth, thermoplastics are heated at a temperature of thermoplasticity. See column 7, lines 1-10.

Given the above teachings, it is reasonable to conclude that the claimed "remeltable and resolidifiable bondable thermoplastic surface on the cloth" embraces Pedlow's thermoplastic resin having at least one surface thermally bonded to a fiberglass cloth. Although Pedlow's flowable thermoplastic resin can be converted to a foamy charred residue at a temperature above 662°F (350°C), there is ample evidence that it is "remeltable and resolidifiable" at a temperature between 150 and 300°C as indicated *supra*.

Appellant argues that "the Pedlow reference provides absolutely no suggestion that [its] thermoplastic resin must be present in amounts operable to bond overlapping knuckles of the woven fiberglass [cloth] . . . ." See Brief, page 5. However, as is apparent from Pedlow's Figure 1, Pedlow's thermoplastic coating fully envelops and bonds the entire upper surface of a woven fiberglass cloth. Thus, we agree with the examiner that Pedlow necessarily employs a thermoplastic resin in the claimed amounts, i.e., amounts sufficient to cover the entire surface, including knuckles, of the claimed woven fiberglass cloth.

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Even if we agreed with appellant that Pedlow does not necessarily employ the thermoplastic resin in the claimed amounts, it would have been at least obvious to one of ordinary skill in the art to employ the thermoplastic resin in sufficient amounts to overlap and bond the entire surface of a woven fiberglass cloth and to prevent significant fraying of cut edges. The suggestion can be derived from the readily recognizable and observable problems associated with significant fraying of cut edges and insufficient bonding. Moreover, to use the thermoplastic resin as the primary electrical insulation material as taught by Pedlow, one of ordinary skill in the art would have been led to use the thermoplastic in amounts sufficient to cover the entire surface of a woven fiberglass cloth in a sufficient thickness for bonding and preventing fraying of cut edges.

In view of the foregoing, we concur with the examiner that the claimed subject matter as a whole is anticipated by, or in the alternative would have been obvious over, the disclosure of Pedlow. Hence, we affirm the examiner's decision rejecting claims 1 through 3 under 35 U.S.C. § 102 as anticipated by, or in the alternative under 35 U.S.C. § 103 as

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unpatentable over, the disclosure of Pedlow.

However, the examiner's § 103 rejection of claim 4 as unpatentable over the disclosure of Pedlow stands on a different footing. As acknowledged by the examiner (Answer, page 3),



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Pedlow does not teach using a surfactant on the cloth prior to applying a thermoplastic coating. The examiner, however, asserts (*Id.*) that:

Such a modification would have been suggested by the reasoned motivation that such a material would provide good wetting of the cloth by the resin and form a more stable laminate.

This assertion is not supported by any objective evidence relied upon by the examiner. Under these circumstances, we are constrained to reverse the examiner's § 103 rejection of claim 4 as unpatentable over the disclosure of Pedlow.

*REJECTION BASED ON PEDLOW AND MATER*

As evidence of obviousness of the subject matter defined by claim 18 under 35 U.S.C. § 103, the examiner relies on the combined teachings of Pedlow and Mater. See Answer, page 3. The examiner recognizes that Pedlow does not teach using PETG as a thermoplastic insulation material. *Id.*

To remedy this deficiency, the examiner relies on the disclosure of Mater. See Answer, pages 3 and 4. However, Mater does not indicate that PETG is useful as an electrical insulation material. See Mater in its entirety. Since, on this record, the examiner has not demonstrated that PETG is

useful as an electrical insulation material, we find no suggestion to employ PETG in the thermoplastic coating of the electrical insulation material of the type described in Pedlow. Accordingly, we reverse this § 103 rejection as well.

*REJECTION BASED ON WADE ALONE OR IN COMBINATION WITH MATER*

We reverse the examiner's § 103 rejection of claims 1 through 4 as unpatentable over the disclosure of Wade for at least one reason expressed by appellant at page 10 of the Brief. We find that Wade describes wrapping woven glass fibers in tape form with a multi-layer polyester tape material. See column 2, lines 42-54. To properly fuse the polyester tape material to the woven glass fibers, however, the amorphous layer of the polyester facing the glass fibers is converted to crystalline. See column 3, lines 17-25.

According to appellant (Brief, page 10), the crystalline layer of the polyester tape bonded to the woven glass fibers "will not remelt and resolidify . . . " as required by the claims on appeal. The examiner has not disputed this assertion. See Answer, page 7. Thus, we are constrained to agree with appellant that the examiner has not established a *prima facie* case of obviousness within the meaning of 35

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U.S.C. § 103.

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We also reverse the examiner's § 103 rejection of claim 18 as unpatentable over the combined disclosures of Wade and Mater for the reasons indicated above.

*REJECTION BASED ON YOSHIMI*

As evidence of obviousness of the subject matter defined by claims 1 and 3 under 35 U.S.C. § 103, the examiner relies on the disclosure of Yoshimi. We find that Yoshimi discloses a disk type insulating material for conductive flat coils.

See pages

2 and 3. We find that the disk-type insulating material is formed by impregnating either one or both sides of a glass fiber woven fabric with a heat resistant thermoplastic resin film by thermocompression bonding. See pages 2 and 7. The heat resistant thermoplastic resin includes, *inter alia*, aromatic polyester, polyphenylene sulfide, and polyether sulfone. See page 5. We find that appellant acknowledges that the melting points of polyphenylene sulfide and polyether sulfone are 527°F and 509°F, respectively, which are either close to or within the claimed melting point requirement. See Reply Brief, page 5, together with claim 1. We also find that

appellant does not argue that Yoshimi does not teach or suggest using the heat-resistant thermoplastic resin in the claimed amounts (amounts sufficient to "bond overlapping knuckles of the woven fiberglass together, and to prevent significant fraying of cut edges of said sheet or tape . . . .") See Brief and Reply Brief in their entirety. We find that appellant does not argue that the heat-resistant thermoplastic resin surface bonded to the glass fiber woven fabric is not "remeltable [or] resolidifiable". *Id.*

Given the above circumstances, we agree with the examiner that Yoshimi would have at least rendered the subject matter of claims 1 and 3 obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103. Hence, we affirm the examiner's § 103 rejection of claims 1 and 3 as unpatentable over the disclosure of Yoshimi.

With respect to claim 4, we find that Yoshimi teaches a silane coupling agent, such as N,N-bis( $\beta$ -hydroxyethyl)-(-aminopropyltriethoxysilane, is mixed into the heat resistant thermoplastic resin to improve adhesion between the heat resistant thermoplastic resin film and the glass fiber woven

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fabric. See page 5. The examiner implies that this silane coupling agent corresponds to the claimed surfactant (silane). See Answer, page 5. Relying on this implication, the examiner concludes (*Id.*) that:

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The reference does suggest inclusion of a surfactant in the resin, and as such would have suggested to the skilled artisan that the cloth [would] be saturated.

Appellant does not dispute the above finding and conclusion set forth by the examiner. See Reply Brief, page 6. Appellant only argues that the claimed melting point limitation is not taught by Yoshimi. *Id.* However, as indicated *supra*, we find that Yoshimi teaches at least one heat-resistant thermoplastic resin having the claimed melting point. Accordingly, we affirm the examiner's § 103 rejection of claim 4 as unpatentable over the disclosure of Yoshimi.

With respect to claim 18, the examiner takes the position (Answer, page 5) that

the use of any known thermoplastic of the type suggested by the reference, including PETG would have been obvious to the skilled artisan as the use of known, commercially available materials of the type suggested by the reference.

As argued by appellant (Reply Brief, page 6), we find no teaching or suggestion that polyethylene terephthalate glycol (PETG) is useful for the purpose mentioned in Yoshimi. Thus, we agree with appellant that the examiner has not established a *prima facie* case of obviousness regarding the claimed

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subject matter, for there is no suggestion to employ PETG as the heat resistant thermoplastic of Yoshimi's device. Accordingly, we reverse the examiner's § 103 rejection of claim 18 as unpatentable over the disclosure of Yoshimi.

As a final point, we note that Yoshimi teaches that its heat-resistant thermoplastic resin film can be adhered to one side of the woven fiberglass fabric. See page 2. Thus, in the event of further prosecution, the examiner is advised to include claim 2 in her § 103 rejection based on Yoshimi.

We also note that *Kirk-Othmer Encyclopedia of Chemical Technology*, Vol. 13 (3<sup>rd</sup> ed., John Wiley & Sons 1981), a copy of which is attached herewith, describes "remeltable and resolidifiable" thermoplastic resins, such as polyester and epoxy resins, impregnated on a reinforcing web consisting of fiberglass. See pages 558-59. Thus, in the event of further prosecution, the examiner is also advised to review this literature and determine whether it affects the patentability of the claimed subject matter.

In summary,

(1) the §§ 102 or 103 rejection of claims 1 through 3



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over the disclosure of Pedlow is affirmed;

(2) the § 103 rejection of claim 4 over the disclosure of Pedlow is reversed;

(3) the § 103 rejection of claim 18 over the combined disclosures of Pedlow and Mater is reversed;

(4) the § 103 rejection of claims 1 through 4 over the disclosure of Wade is reversed;

(5) the § 103 rejection of claim 18 over the combined disclosures of Wade and Mater is reversed;

(6) the § 103 rejection of claims 1, 3, and 4 over the disclosure of Yoshimi is affirmed; and

(7) the § 103 rejection of claim 18 over the disclosure of Yoshimi is reversed.

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Accordingly, the decision of the examiner is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

*AFFIRMED-IN-PART*

CHUNG K. PAK	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
CATHERINE TIMM	)	APPEALS AND
Administrative Patent Judge	)	INTERFERENCES
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BEVERLY A. PAWLIKOWSKI	)	
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